

The SAN MATEO COUNTY ASTRONOMICAL SOCIETY

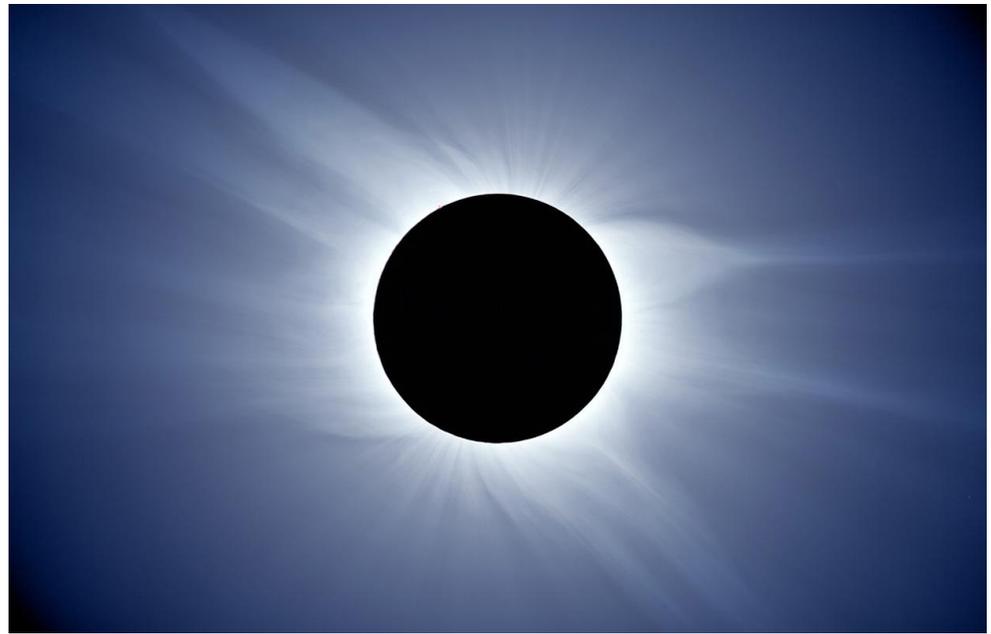
June 2015 – 63th General Meeting Notice



EVENT HORIZON

Founded in 1960, the San Mateo County Astronomical Society is a 501(c)(3) non-profit organization for amateur astronomers and interested members of the public. Visitors may attend Society meetings and lectures on the first Friday of each month, September to June, and star parties two Saturdays a month. All events are free for visitors and guests. Family memberships are offered at a nominal annual cost. Detailed info is found at www.smcas.com, where those who want can join via Paypal.

Membership includes access to this monthly Event Horizon newsletter, discounted costs and subscriptions to calendars and magazines, monthly star parties of the Society and the College of San Mateo, use of loaner telescopes, field trips, social occasions and general meetings presenting guest speakers and programs. For additional information, please email us at SMCAS@live.com, or call us at (650) 678-2762.



Solar Eclipse Chasing and Astronomical Tourism will be the topic for our pizza social, general meeting and special presentation on Friday, June 5. Our speakers will be club and board members, Tom Stephany and Ken. Find additional event details on page 3.

Photo of a total solar eclipse on March 29, 2006 taken from Egypt/Libya, courtesy of Jeff Buell.

Table of Contents

Organizational Information	1
President's Corner	2-3
June Meeting Information	4
May Event Review	5
SMCAS Event Schedule	6
Calendar	7
Members Forum: SLAC Tour Article and Photos	8-9
Rise and Set Chart	11
Directions to CSM, Crestview	12
Application Form & Club Info	13

SAVE THESE DATES! MORE EVENTS ON PAGE 5

- **SMCAS General Meeting**
Friday, June 5, 2015. CSM Planetarium. Pizza social and general meeting at 7:00 p.m. Special presentation at 8:00 p.m. Find details on page 3.
- **Crestview Star Parties – June 2015**
Saturday, June 13 and Saturday, June 20. Crestview Park, San Carlos, 8:15 p.m.
- **SMCAS Annual Banquet and Office Installation**
Saturday, July 11, 2015, 6:00 p.m. Roundtable Pizza, 61 43rd Ave, San Mateo. More details on page 7.

President's Corner

Two important dates to get on your calendar! The first is our final meeting before our normal summer break: Friday, June 5th. This is the meeting where we hold the annual election of the SMCAS Board of Directors and Officers. The second is our annual banquet and installation of officers on July 11, at Round Table Pizza in San Mateo. Be sure to come out and vote, and to enjoy the banquet!

Another **save the date** to put on your calendar: Saturday October 17. This is the planned date for the annual CSM/SMCAS Family Science and Astronomy Festival. This event gets bigger and better every year as we learn and evolve. Once again, we can use as many SMCAS volunteers as we can get to help make it a successful event and a lot of fun for everyone!

As noted in the previous Event Horizon, Dean Drumheller is retiring from CSM this summer, and we will miss him. Dean was a key resource for us and for CSM Observatory and Planetarium operations. But I am happy to introduce his replacement, Justin Stevick, who started at CSM on May 14 and is on a fast learning curve taking over from Dean. You will see him at our upcoming meetings and events; be sure to introduce yourself.

Justin is originally from Petaluma, but left the Bay Area to pursue his BS in Astronomy at the University of Hawaii in Hilo, graduating in 2008. While at school in Hilo, he worked at the Mauna Kea Observatory visitor center. He then came back to the Bay Area for a while, teaching at Petaluma High School and at San Francisco State University astronomy labs.

Justin then went on to San Diego State University and earned a Masters degree in Astronomy in 2015, which is just now being finalized. While at SDSU, he worked with Dr. William Welsh and Dr. Jerome Orosz on the discovery and characterization of circumbinary planets (planets that orbit binary stars).

His masters work involved the Kepler 9 system in the constellation Lyra, discovered by the [Kepler Mission](#) in 2010, which was the first planetary system detected with the [transit method](#) found to contain multiple planets, three to date (Kepler 9b & 9c, both Saturn size, and 9d, a super-Earth size).

The large outer planets 9b and 9c were found to interact gravitationally to produce non-[Keplerian](#) orbits, termed 'mean motion resonance', and were the first planets discovered with this configuration. Justin's master's work involved the most complete analysis to date of that multi-transiting system. The inner super-Earth 9d planet's orbit, at an orbit period of 1.59 days, was found non-interacting with the larger planets, not in resonance. And importantly, via radial velocity measurements, Justin found intriguing evidence, but no confirmation yet, that additional planets orbiting Kepler 9 may exist.

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President's Corner, Cont'd.

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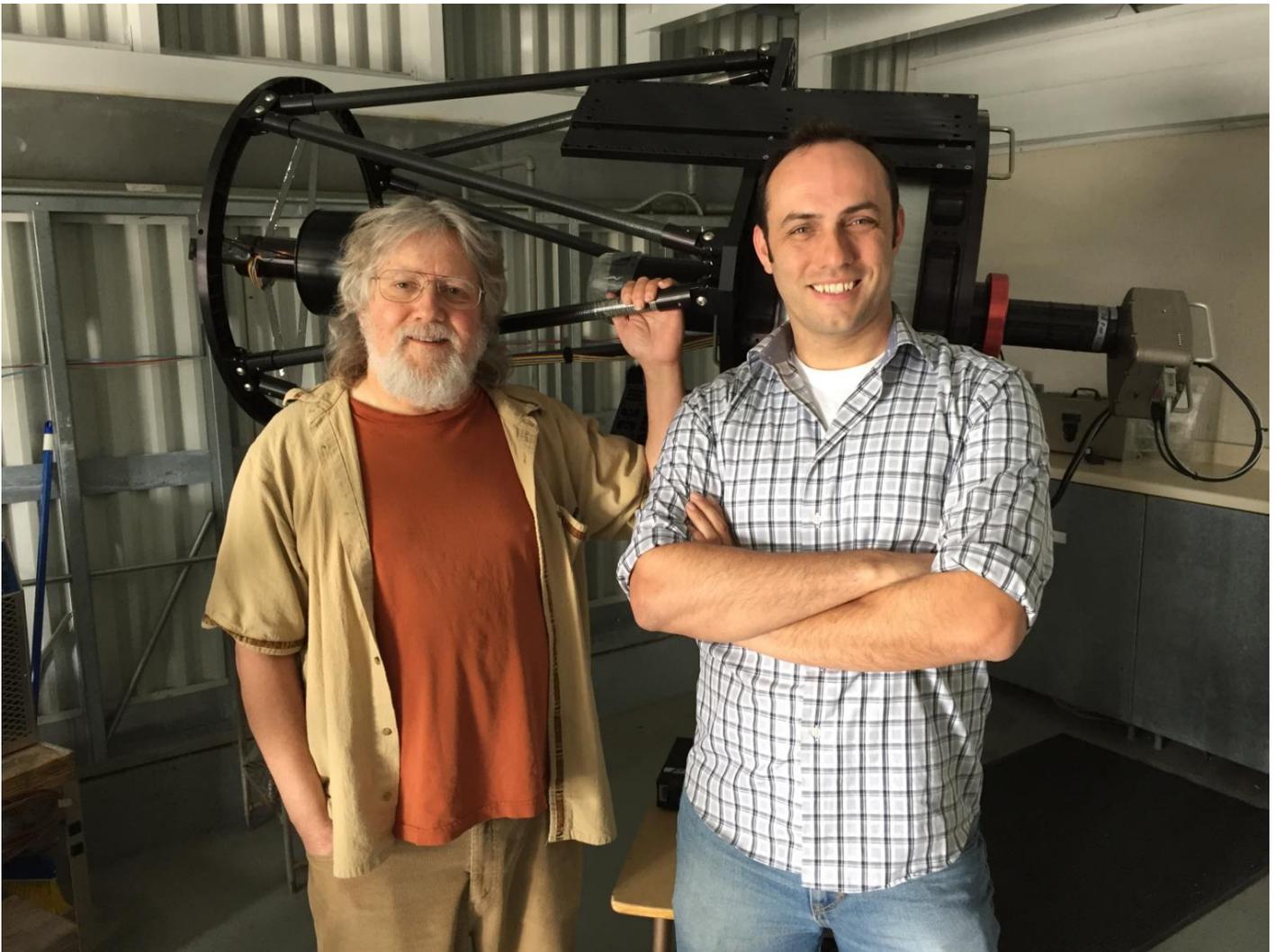
When he has time, his hobbies include photography, backpacking in the Sierras — particularly in the Desolation Wilderness west of Lake Tahoe — and mountain biking.

With such an extensive background, I am sure he will soon be a valuable addition to the CSM Astronomy program and SMCAS activities. Welcome aboard, Justin. We are all looking forward to working with you!

Marion Weiler

President, San Mateo County Astronomical Society

mgwe@pacbell.net



Dean Drumheller and Justin Stevick in front of the RC-20 telescope at the CSM Observatory.

Astronomical Tourism and Solar Eclipse Chasing

Date/Time: Friday, June 5, 2015

General meeting at 7:00 p.m., presentation at 8:00 p.m.

Speakers: Ken Lum and Tom Stephany

SMCAS Members

Topic: Astronomical Tourism and Solar Eclipse Chasing

Astronomical tourism is a relatively recent activity made possible by the rise of relatively cheap and easy travel. Trips include visits to far away new and historic observatories, rocket launches, picturesque places to observe aurorae, and, especially solar eclipse visits.

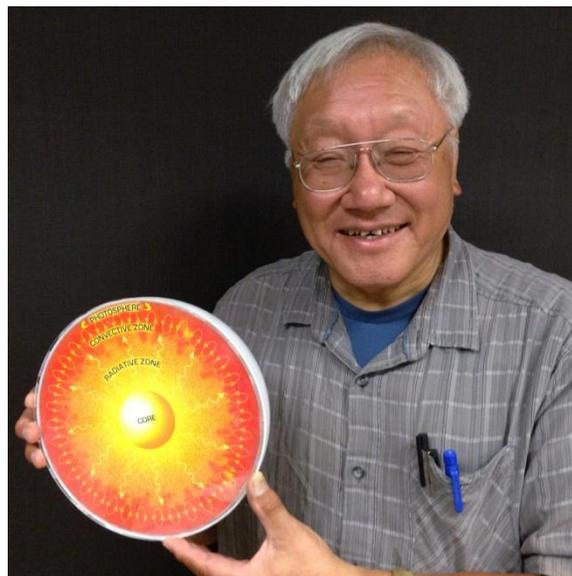
Solar eclipses have been observed by humans for thousands of years and have been recorded in the archives of the ancient Egyptians, Babylonians, and Chinese going back 4000 to 4500 years ago. But exact predictions only became available in the 19th Cent. making it possible to plan to be under the path of totality ahead of time with considerable precision.

Recently, travel businesses have been established to cater to people wanting to experience these spectacular and, sometimes rare, astronomical events. This presentation will provide some sense of what participants on these trips have been able to see and do.

Ken Lum and Tom Stephany are both members of SMCAS — both veteran amateur solar eclipse chasers and have been astronomical tourists for many years. Both have a wealth of travel experience. They will discuss some of the logistics of their preparations and the remarkable results of their efforts.



Tom Stephany



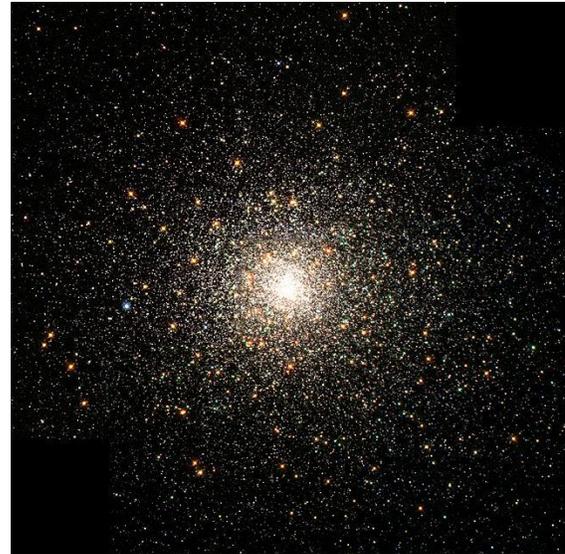
Ken Lum

May Meeting Review

Findings Show that Globular Clusters Formed in the Early History of the Milky Way and for a Brief Period of Time

As shown by Dr. Graeme Smith of UCSC last month, globular star clusters are perhaps the most mysterious of objects found in galaxies. These objects surround all galaxies in halos as found first around the Milky Way galaxy by Harlow Shapley at Mt. Wilson in 1918. His 3-D mapping of their distribution allowed Shapley to discover the size of the Milky Way for the first time by determining the size of the globular cluster halo.

Subsequent deeper examination of the component stars show most of them to be older stars of 11-13 billion years old, often lacking much in the way of heavier chemical elements present in younger stars. This is what would be expected for objects formed in the early Universe soon after the Big Bang before heavier elements existed in much abundance. There are also only around 150-180 of these objects found around the Milky Way in contrast to there being thousands of more recently formed open clusters whose stars are often rich in heavier elements synthesized in previous generations of older stars that scattered them into the Universe via supernova explosions or planetary nebula formation.



M80 Globular Cluster photographed from the Hubble telescope.



Dr. Graeme Smith takes questions at the May meeting. SMCAS President Marion Weiler, right.

These findings suggest that globular clusters formed under very specific star formation conditions that existed only in the early history of the Milky Way's origin and only for a brief period of time. What those conditions were and how they changed into present-day star forming conditions that favor origination of open star clusters remains a complete mystery.

Article and photos courtesy of Ken Lum.

Event Update

You Are Invited! Many Fun, Family and Educational Activities Scheduled For the Next Few Months, Including Members Banquet and Officer Installation

We have many fun and interesting activities scheduled for the next several months, including Star Parties, our Annual Banquet and Officer Installation, and the Fremont Peak Star-B-Q. Please go to our website (www.smcas.net) or contact Marion Weiler (mgwe@pacbell.net) for more information. Contact Ed Pieret (epieret@comcast.net) if you are available to help out with Star Parties at Crestview Park.

Here is a summary of activities planned for the group through October 2015. We will update this list in each issue of Event Horizon!

- | | | | |
|---------------------------|-----------|-------|--|
| Friday, June 5, 2015 | 7:00 p.m. | ..... | General Membership Meeting, Pizza Social and Presentation |
| Saturday, June 13, 2015 | 8:15 p.m. | ..... | Crestview Star Party |
| Saturday, June 20, 2015 | 8:15 p.m. | ..... | Crestview Star Party |
| Saturday, July 11, 2015 | 6:00 p.m. | ..... | Annual Banquet and Officer Installation Roundtable Pizza, San Mateo |
| Saturday, August 8, 2015 | 8:00 p.m. | ..... | Crestview Star Party |
| Saturday, August 12, 2015 |  | ..... | Perseid Meteor Shower |
| Saturday, August 15, 2015 | 8:00 p.m. | ..... | Crestview Star Party |
| Saturday, August 15, 2015 | 4:00 p.m. | ..... | Fremont Peak Star-B-Que San Juan Bautista, CA |
| Friday, Sept. 4, 2015 | 7:00 p.m. | ..... | General Membership Meeting, Pizza Social and Presentation |
| Friday, Oct. 2, 2015 | 7:00 p.m. | ..... | General Membership Meeting, Pizza Social and Presentation |
| Saturday, Oct. 17, 2015 | 2:00 p.m. | ..... | Family Science and Astronomy Festival |

Save the Date for Our SMCAS Annual Banquet and Installation of Officers

SMCAS Annual Banquet and Installation of Officers!

Saturday, July 11, 2015, 6:00 p.m.

Round Table Pizza, 61 43rd Ave., San Mateo

Join us in the private dining room at Round Table for a fun evening with lots of good company and food, a presentation and more! We will also be installing our Officers and Board of Directors for 2015-16. The standard menu provided will be mix of pizza flavors, salad, wings, twists, and soft drinks. We will send out more details on pricing, etc., via the SMCAS Yahoo Group soon.

Please RSVP to Marion Weiler at MGWE@PACBELL.NET by Thursday, July 9.

June 2015						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2	3	4	5 7:00 PM SMCAS Meeting	6
7 sunset 11:03	8	9	10	11	12	13 8:30 PM Crestview Star Party
14 sunset 11:05	15	16	17	18	19	20 8:30 PM Crestview Star Party
21 sunset 11:06	22	23	24	25	26	27
28 sunset 11:07	29	30				

• observing event • club event • community event

Members Forum

SLAC Tour Educates and Delights Participants

By Marion Weiler

On Friday, May 8, 24 SMCAS members were given a private tour of SLAC National Laboratory in Menlo Park. SLAC research scientist and observational cosmologist Dr. Mandeep Gill led the tour. Mandeep received his Ph.D. at SLAC in particle physics in 2004, with a thesis concentrating on the mystery of matter-antimatter asymmetry in our Universe. Many of you may recall Mandeep from when he presented to our general meeting back in December 2013 on the topic of Gravitational Lensing.

The tour was a unique opportunity, as public tours of SLAC are currently not available. And as a special and unexpected bonus, our tour happened to be the same day as the christening of the new clean room at SLAC for the assembly of the 3,200 megapixel camera to be used on the [LSST - the Large Synoptic Survey Telescope](#). The LSST is scheduled for first light in 2019. As part of the christening, there was a reception where we were able to meet and mingle with SLAC scientists and the SLAC director, and also go inside the clean room.

The complete tour lasted several hours, and in addition to the new clean room we were able to visit the Klystron Gallery: the lab's 2-mile linear accelerator which is one of the world's longest buildings; the Collider Experiment Hall, where Z₀ bosons confirming the electroweak theory were created in the 90s; and the 3-D Astro-movie Visualization Lab where we were able to view the birth of the universe in immersive 3-D on an impressive wall-size screen!

Continued on page 10.



Group photo in the Collider Experiment Hall.

Continued from page 9

It was a great tour, and afterwards about 8 members retreated for dinner and drinks at a nearby restaurant. We hope to do more tours of interesting locations in the future. If you have ideas on places you think would be good tours for SMCAS, please let me or other board members know, and we will see if we can arrange one.



Preparing for entering the LSST Clean Room.



The LSST Clean Room at SLAC.



The Klystron Gallery.



Mandeep describes the LSST.

Astronomy Myths

Christopher Columbus Discovered the Earth is Round

By Ed Periet

This is wrong on a number of levels.

First, the Earth isn't round; it is spherical. To be precise, it is an Oblate Spheroid because the Earth's spin causes the equator to bulge. The spherical shape of the Earth was well known by scholars at Columbus' time and had been known since the ancient Greeks. In fact, the Greeks had measured the circumference of the Earth using geometry and the length of the Sun's shadows. Columbus had studied the philosophical and astronomical texts of the Greeks and knew this.

Columbus' error and that of the scholars of his time was in underestimating the size of the Earth. Although the Greek measurement is now known to be quite accurate, at that time there was uncertainty about the length of the ancient units of measure. This uncertainty along with the crude navigation tools available lead Columbus to be convinced that he had reached the Indies.

The idea that Columbus discovered the Earth is round came from Washington Irving's 1828 biography of Columbus. This idea was picked up by many school teachers and even included in textbooks.

It is also not true that Columbus discovered America. That happened 12,000 to 15,000 years ago when ancient humans first arrived on the continent. Columbus wasn't even the first European to come to America - that honor goes to Leif Eriksson who visited North America about 400 years earlier.

Editors Note

As Event Horizon editor for the past year, I would like to thank the entire board for helping produce an ever-improving and member-focused newsletter. Together, we worked to make Event Horizon a more relevant and integral part of our organization. We hope it made a difference for you. Among our changes...we formed an editorial board to guide newsletter content and quality, included more event coverage and photos, and created a list of future activities — updated each month — so that members can plan accordingly and participate. Board and club members stepped up to provide important newsletter material — graciously and on time. Special thanks to Marion Weiler, Ken Lum, Ed Pieret, Ron Cardinale, Karen Boyer, Tom Stephany, and Mike Ryan.

Karen Zamel, Event Horizon Editor

June Rise and Set Chart

<i>SMCAS (PDT)</i>	<u>Jun 13</u> <u>Rise</u>	<u>Jun 13 Set</u>	<u>Jun 20</u> <u>Rise</u>	<u>Jun 20 Set</u>	<u>Jun 27</u> <u>Rise</u>	<u>Jun 27 Set</u>
Sun	5:47 AM	8:31 PM	5:48 AM	8:33 PM	5:50 AM	8:34 PM
Moon	3:46 AM	5:41 PM	9:54 AM	11:27 PM	4:23 PM	2:38 AM
Mercury	5:00 AM	6:52 PM	4:41 AM	6:40 PM	4:32 AM	6:45 PM
Venus	9:15 AM	11:33 PM	9:19 AM	11:22 PM	9:20 AM	11:07 PM
Mars	5:48 AM	8:32 PM	5:40 AM	8:26 PM	5:33 AM	8:20 PM
Jupiter	10:13 AM	12:03 AM	9:51 AM	11:35 PM	9:30 AM	11:11 PM
Jupiter's moons	e i J g c		c e i J g		e i J g c	
9:30 PM, East on left	J=Jupiter, c=Callisto, e=Europa, g=Ganymede, i=Io					
Saturn	6:29 PM	4:42 AM	6:00 PM	4:13 AM	5:30 PM	3:44 AM
Uranus	2:32 AM	3:20 PM	2:06 AM	2:54 PM	1:38 AM	2:27 PM
Neptune	12:54 AM	12:05 PM	12:27 AM	11:37 AM	11:55 PM	11:09 AM
Pluto	9:48 PM	7:42 AM	9:20 PM	7:14 AM	8:51 PM	6:45 AM

- Courtesy of Ron Cardinale

Fundraising for the Club: SMCAS Participates in AmazonSmile and Receives a Percentage of Your Purchase

SMCAS is now enrolled in AmazonSmile, a program that enables certified 501(c)(3) non-profit organizations to receive donations from eligible purchases at Amazon.



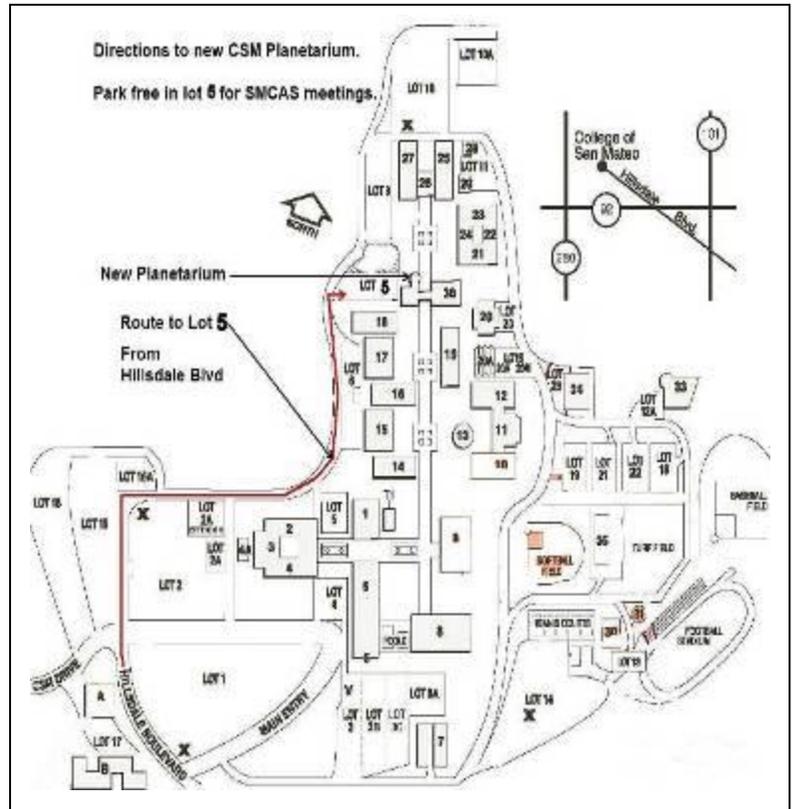
To enroll in the program, go to smile.amazon.com. On your first visit to this site, you can select a charitable organization – San Mateo County Astronomical Society (SMCAS) – that will receive 0.5% of the purchase price of eligible items on Amazon. How will you know if an item is eligible? Items are clearly and literally marked on the product detail pages with “Eligible for AmazonSmile donation.” For more information, go to smile.amazon.com/about.

Directions to SMCAS Meetings at CSM, and to Star Parties

Star Parties are Free to Members and Visitors and are Held Regularly, Weather Permitting

Directions to the CSM Planetarium for Meetings

After exiting Hwy 92 at Hillsdale Blvd, climb the hill towards CSM, passing two traffic lights to the stop sign at the top. Continue straight, bear right then, after the 2nd stop sign, bear left over the rise. Enter the next parking lot on the right, called Lot 5, "Marie Curie". Science Bldg 36 and the planetarium lie straight ahead. Enter Bldg. 36 thru the door facing the lot, or



Crestview Park

Come on out, and bring the kids, for a mind-blowing look at the Universe!

Bring your binoculars, telescopes, star guides, and lounge chairs for some informal star gazing at Crestview Park.

Dress warmly and wear a hat. Only visitors with telescopes should drive in. Others should park on the street and walk in, or arrive before dark so that car headlights don't affect the observers' dark adaptation. Bring small flash-lights only, covered with red cellophane or red balloon.

These measures avoid safety issues of maneuvering in the dark, as well as ruining the night vision of the viewers.

Please don't touch a telescope without permission. And, parents, please don't let children run around in the dark.

Directions to Crestview Park for Star Parties

From Hwy 101 or El Camino, take Brittan Avenue in San Carlos, west (to the hills). Follow Brittan 2.3 miles (from El Camino) to Crestview Drive. Turn right on Crestview. In half-a-block, you will see a small blue posted sign with an arrow, indicating the entry road into Crestview Park. It lies between houses with addresses #998 and #1000 Crestview Drive.

From Highway 280, take Edgewood Road exit. Go east (toward the Bay) about 0.8 miles. Turn left at Crestview Drive. Go 0.5 mile uphill to where Crestview meets Brittan. Again, drive the half-block, to the sign on the right, and the entry road on the left.

Note: If bringing a telescope and arriving after dark, please enter the Park with your headlamps and white interior lights off. If you aren't bringing a telescope, whether before or after dark, please park along Crestview Drive, and walk in.

2nd Note: Crestview Park is residential, adjacent to homes and backyards. Before inviting potentially noisy groups, please call Ed Pieret at (650) 595-3691 for advice and advisories. Call Ed also to check the weather and 'sky clock', and to see whether the star party is still scheduled.

Membership Application and Society Information

To join the San Mateo County Astronomical Society or to renew membership, you can pay dues via Pay Pal on our website (www.smcas.net), at any monthly meeting, or send your check, payable to SMCAS, to: **SMCAS, PO Box 974, Station A, San Mateo, CA, 94403.**

Dues are currently \$30 for a new (family) membership and renewing member and \$15 for a student membership.

Please check one of the following boxes: () New member () Membership renewal () Student () Address or info change

NOTE TO RENEWING MEMBERS: Please complete the following only for a change to your membership or contact info.

Name(s) _____

Address/City/Zip: _____

Phone(s) _____ Email _____

SMCAS – Society Information

Meetings of the San Mateo County Astronomical Society are held the **first Friday of the month (except in July and August)** in the Planetarium at the College of San Mateo, 1700 West Hillsdale Blvd. in San Mateo. Exit Hwy. 92 at West Hillsdale Blvd. and, proceed uphill through the second and third sets of traffic lights, to the first stop sign at the top of the hill. Continue straight, bearing right then, after the second stop sign, left up over a rise. After the third stop sign, enter the first parking lot on the right with a sign 'Lot 5, Marie Curie', identifying the top level plus those below.

Science Bldg. 36 adjoins the lot, with the geodesic planetarium dome to its left. Circle the planetarium, or enter Bldg 36 thru the door facing Lot 5. For the 4th floor observatory, use the elevator just inside on the right. The planetarium corridor is ahead on the left. Turn left at the restroom sign.

Officers: President: Marion Weiler; **Vice-President:** Ed Pieret; **Secretary:** Karen Boyer; **Treasurer:** Tom Stephany. **Board Directors-At-Large:** Bob Franklin, Ken Lum, Karen Zamel, Jeff Dye, Ali Emami. Andy Thanos.

Event Horizon Editor: Karen Zamel. **NOTE:** Newsletter is posted by the beginning of each month (except for July and August). Submissions and photos are welcome by the 15th of the month before publication.

SMCAS Contact Information

Website: www.smcas.net

The CSM Astronomy Department schedule is at www.collegeofsanmateo.edu/astronomy/events.

Email: SMCAS@live.com

Society Yahoo group: <http://groups.yahoo.com/group/smcas>.

Yahoo Group Subscription: email smcas-subscribe@yahoogroups.com telling your interest in title and body text.

Event Horizon: To submit articles or photos, please contact Editor Karen Zamel: karenzamel@gmail.com or (650) 814-3902.